

IN THE CLAIMS

Please amend the claims to read as follows:

Listing of Claims

1-12 (Canceled)

13. (New) A mode determining apparatus comprising:

a detector that detects changes in a quantized LSP parameter in a predetermined period per order component; and

a mode determiner that determines, based on a detection result of said detector, whether or not the predetermined period indicates a speech mode.

14. (New) The mode determining apparatus of claim 13, wherein the mode determiner determines that the predetermined period indicates the speech mode when the detector detects a change greater than a predetermined level in relation to at least one order component.

15. (New) A mode determining apparatus comprising:

an average LSP calculator that calculates an average quantized LSP parameter in a period in which a quantized LSP parameter is stationary;

a difference calculator that calculates differences between order components of the average quantized LSP parameter and corresponding order components of quantized LSP parameter in a current frame, respectively; and

a first mode determiner that determines that the frame indicates a speech mode when a difference greater than a predetermined level is calculated between at least one pair of order components.

16. (New) The mode determining apparatus according to claim 15, further comprising:

an inter-frame change calculator that calculates inter-frame changes in the quantized LSP parameter; and

a second mode determiner that determines that a period indicates the speech mode when the period shows an inter-frame change greater than a predetermined level, wherein:

the average LSP calculator determines that, in part or all of periods other than the period the second mode determiner determined to indicate the speech mode, the quantized LSP parameter is stationary; and

the first mode determiner determines whether the periods other than the period determined by the second mode determiner to indicate the speech mode indicate the speech mode.

17. (New) A multimode speech decoding apparatus comprising:
a decoder that decodes a code representing a quantized LPC
and generates a quantized LSP parameter;

the mode determining apparatus of claim 15 that utilizes the
quantized LSP parameter generated in the decoder; and

a random codebook that generates a random codebook vector
comprising one of a pulse and noise according to the
determination result in the mode determining apparatus.

18. (New) A multimode speech decoding apparatus comprising:
a decoder that decodes a code representing a quantized LPC
and generates a quantized LSP parameter;

the mode determining apparatus of claim 15 that utilizes
the quantized LSP parameter generated in the decoder; and

a stationary noise generator that drives a synthesis filter
by means of a random signal obtained from a random codebook, the
synthesis filter comprising an LPC parameter obtained from the
average quantized LSP parameter, in periods other than the period
the mode determining apparatus determined to indicate the speech
mode, and superimposes stationary noise generated over decoded
speech.

19. (New) A multimode speech coding apparatus comprising:

an LPC analyzer that performs LPC analysis of an input signal and calculates an LPC;

an LPC quantizer that quantizes the LPC and obtains a quantized LSP parameter;

the mode determining apparatus of claim 15 that utilizes the quantized LSP parameter; and

a noise codebook that generates a noise code vector comprising one of a pulse and noise according to the determination result in the mode determining apparatus.

20. (New) The multi-mode speech coding apparatus of claim 19 further comprising a search range determiner that, in the periods other than the period the mode determining apparatus determines to indicate the speech mode, sets a search range for a pitch period in an adaptive codehook greater than a subframe length.

21. (New) A mode determining method comprising:
detecting changes in a quantized LSP parameter in a predetermined period per order component; and
determining, based on the detection result of said detecting step, whether or not the predetermined period indicates a speech mode.

22. (New) A mode determining method comprising:

calculating an average quantized LSP parameter in a period in which a quantized LSP parameter is stationary;

calculating differences between order components of the average quantized LSP parameter and corresponding order components of a quantized LSP parameter in a current frame, respectively; and

determining that the frame indicates a speech mode when a difference greater than a predetermined level is calculated between at least one pair of order components.